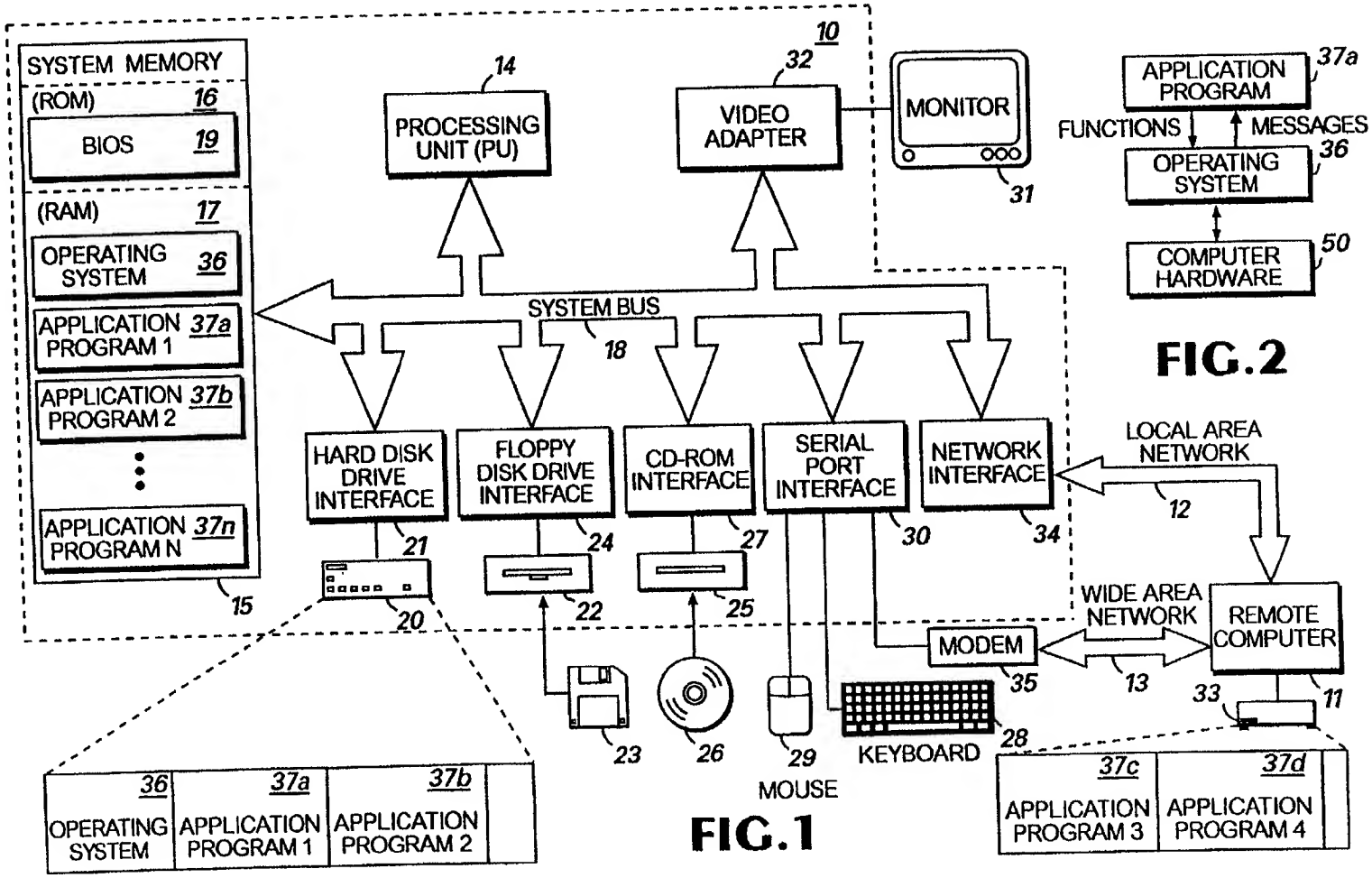
10
SYSTEM MEMORY
(ROM) 16
BIOS 19
(RAM) 17
OPERATING SYSTEM 36
APPLICATION PROGRAM 1 37a
APPLICATION PROGRAM 2 37b
APPLICATION PROGRAM N 37n
15
14
PROCESSING UNIT (PU)
32
VIDEO ADAPTER
MONITOR
31
SYSTEM BUS
18
HARD DISK DRIVE INTERFACE
FLOPPY DISK DRIVE INTERFACE
CD-ROM INTERFACE
SERIAL PORT INTERFACE
NETWORK INTERFACE
21
24
27
30
34
20
22
25
23
26
29
MOUSE
KEYBOARD
28
MODEM
35
LOCAL AREA NETWORK
12
WIDE AREA NETWORK
13
REMOTE COMPUTER
33
11
36 OPERATING SYSTEM
37a APPLICATION PROGRAM 1
37b APPLICATION PROGRAM 2
37c APPLICATION PROGRAM 3
37d APPLICATION PROGRAM 4

FIG.1

APPLICATION PROGRAM 37a
FUNCTIONS
MESSAGES
OPERATING SYSTEM 36
COMPUTER HARDWARE 50

FIG.2

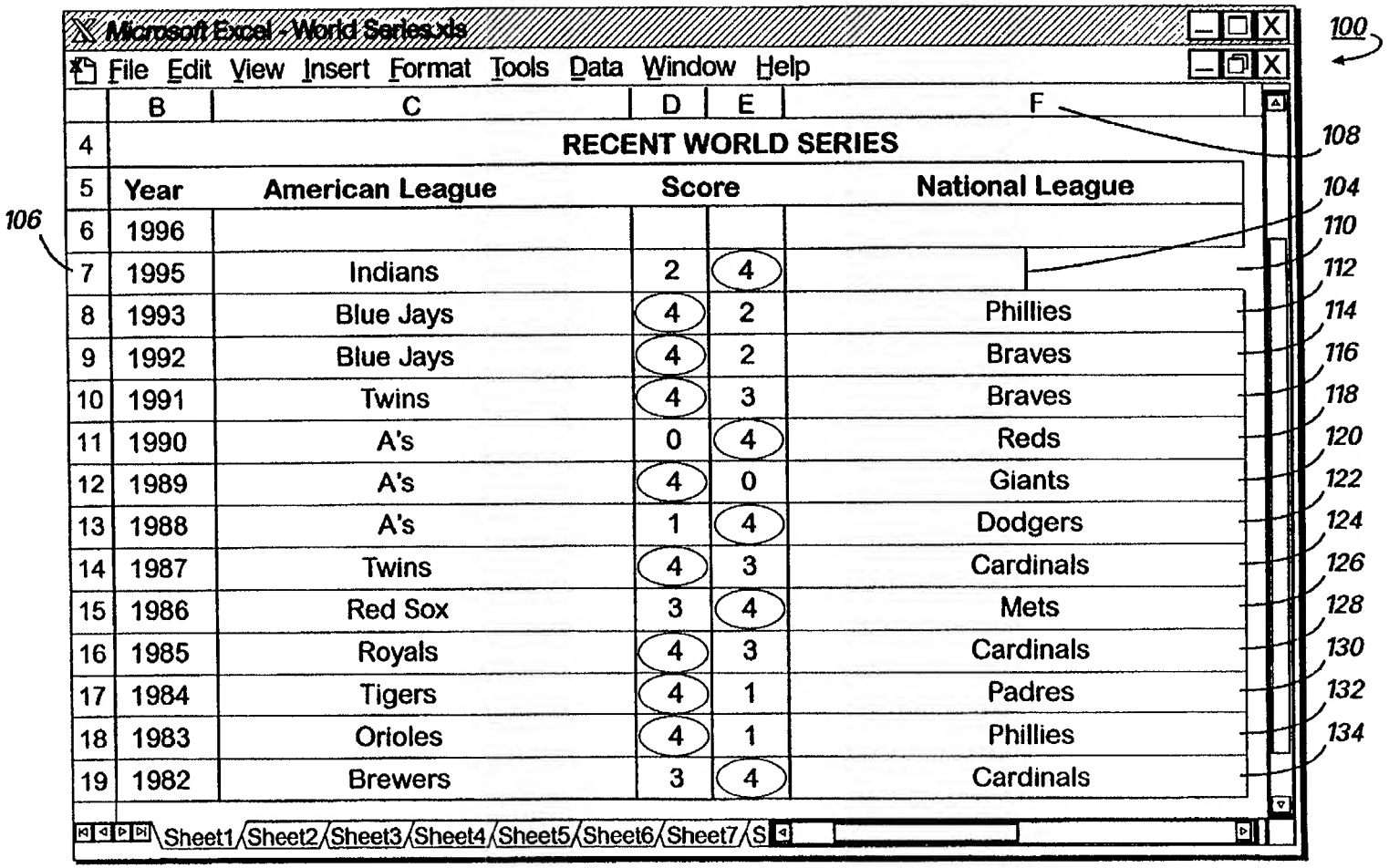
Microsoft Excel - World Series.xls
File Edit View Insert Format Tools Data Window Help
RECENT WORLD SERIES
Year
American League
Score
National League
1996
1995 Indians 2 4
1993 Blue Jays 4 2 Phillies
1992 Blue Jays 4 2 Braves
1991 Twins 4 3 Braves
1990 A's 0 4 Reds
1989 A's 4 0 Giants
1988 A's 1 4 Dodgers
1987 Twins 4 3 Cardinals
1986 Red Sox 3 4 Mets
1985 Royals 4 3 Cardinals
1984 Tigers 4 1 Padres
1983 Orioles 4 1 Phillies
1982 Brewers 3 4 Cardinals
Sheet1 Sheet2 Sheet3 Sheet4 Sheet5 Sheet6 Sheet7
100
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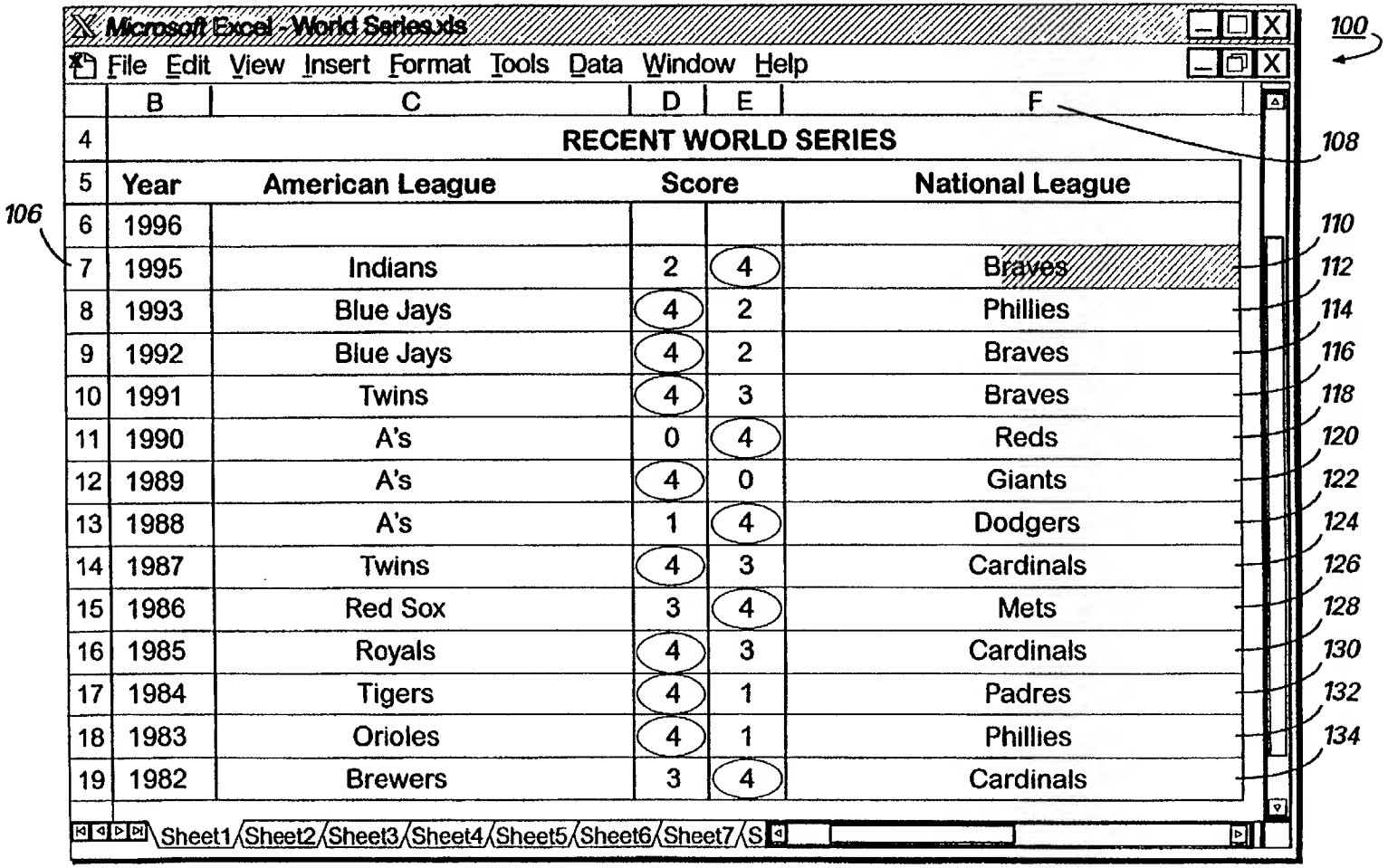
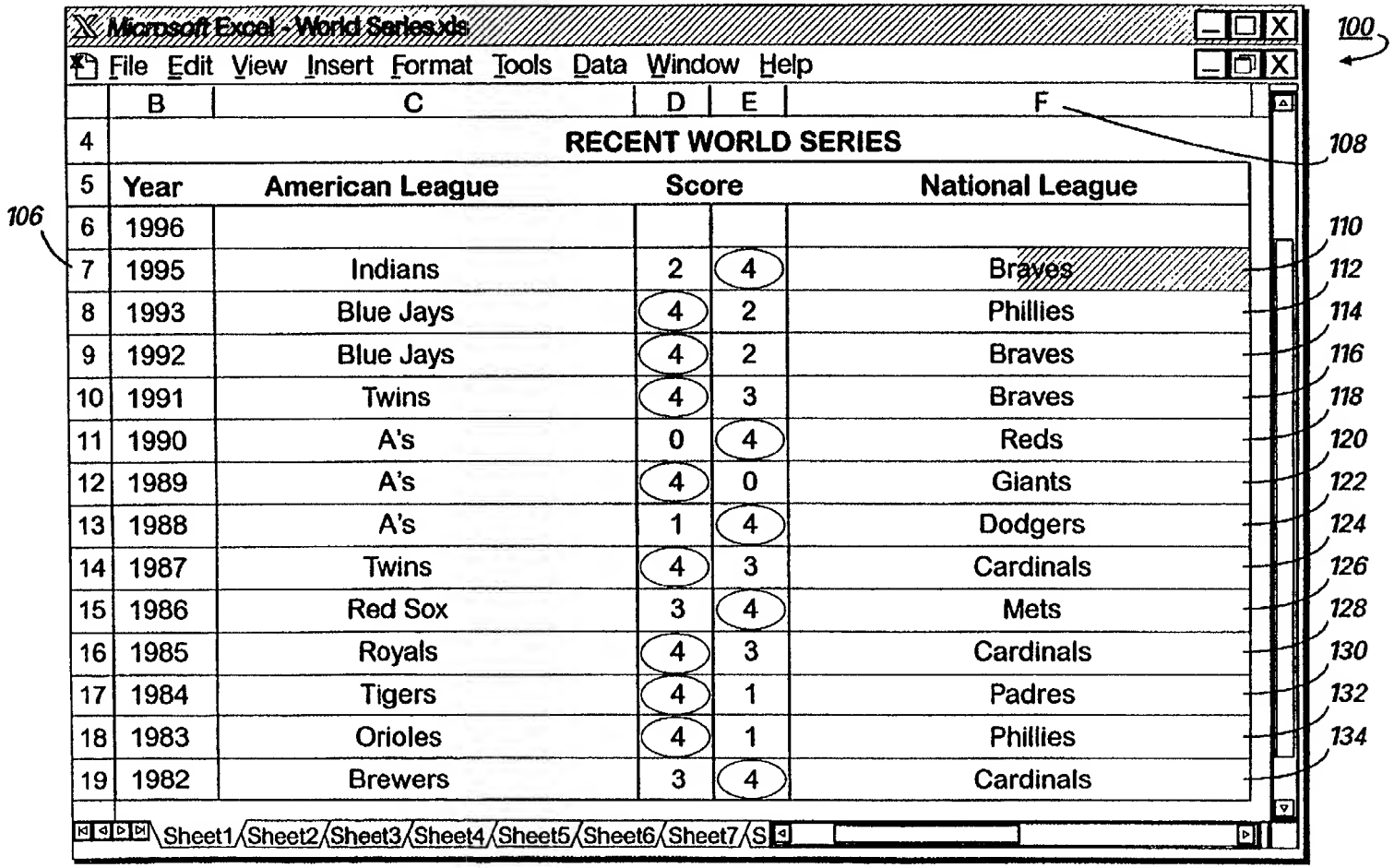
FIG.3a



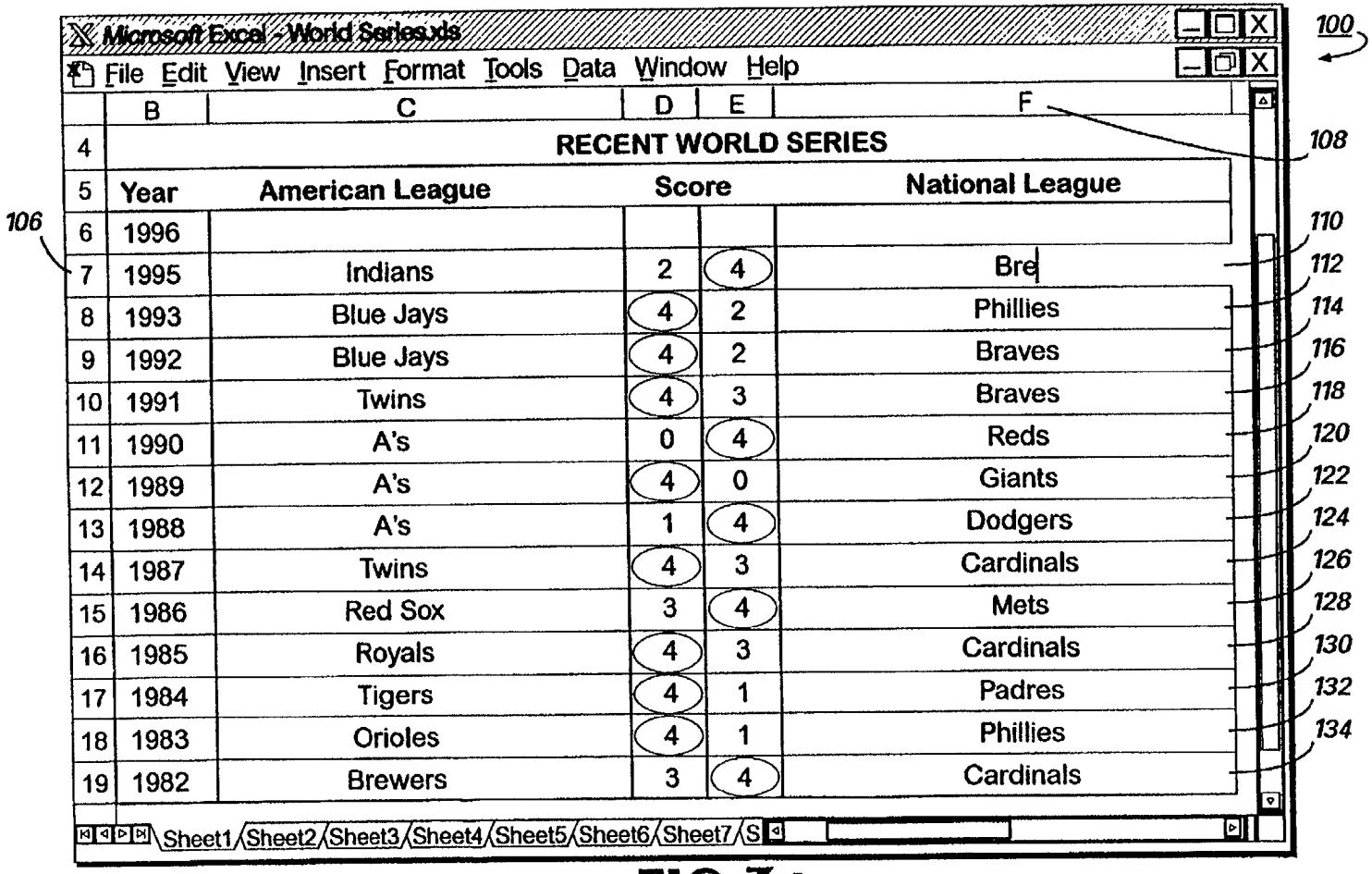
	B	C	D	E	F
4	RECENT WORLD SERIES				
5	Year	American League	Score		National League
6	1996				
7	1995	Indians	2	4	Braves
8	1993	Blue Jays	4	2	Phillies
9	1992	Blue Jays	4	2	Braves
10	1991	Twins	4	3	Braves
11	1990	A's	0	4	Reds
12	1989	A's	4	0	Giants
13	1988	A's	1	4	Dodgers
14	1987	Twins	4	3	Cardinals
15	1986	Red Sox	3	4	Mets
16	1985	Royals	4	3	Cardinals
17	1984	Tigers	4	1	Padres
18	1983	Orioles	4	1	Phillies
19	1982	Brewers	3	4	Cardinals

FIG.3b



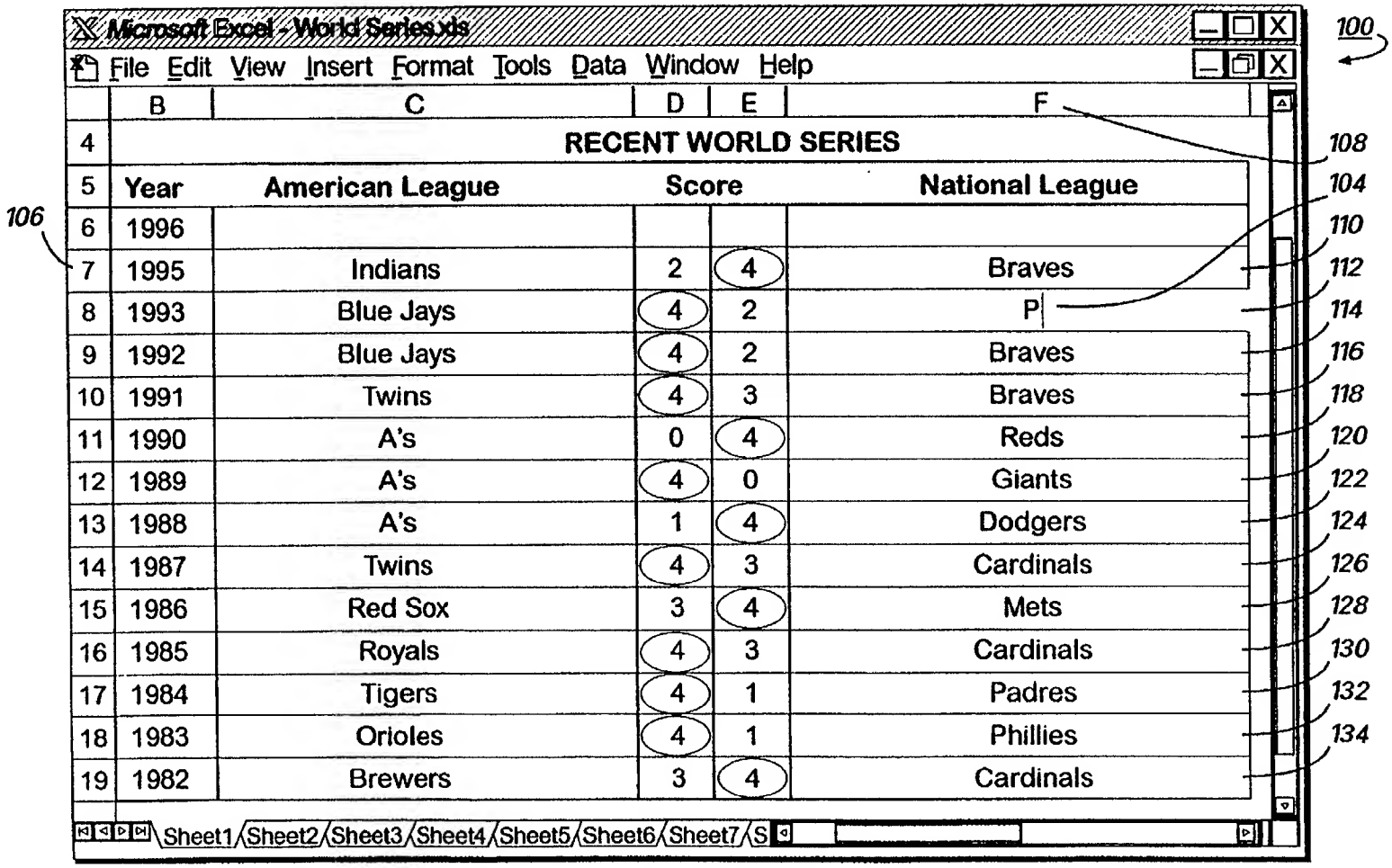
	B	C	D	E	F
4	RECENT WORLD SERIES				
5	Year	American League	Score		National League
6	1996				
7	1995	Indians	2	4	Braves
8	1993	Blue Jays	4	2	Phillies
9	1992	Blue Jays	4	2	Braves
10	1991	Twins	4	3	Braves
11	1990	A's	0	4	Reds
12	1989	A's	4	0	Giants
13	1988	A's	1	4	Dodgers
14	1987	Twins	4	3	Cardinals
15	1986	Red Sox	3	4	Mets
16	1985	Royals	4	3	Cardinals
17	1984	Tigers	4	1	Padres
18	1983	Orioles	4	1	Phillies
19	1982	Brewers	3	4	Cardinals

FIG. 3c



	B	C	D	E	F
4	RECENT WORLD SERIES				
5	Year	American League	Score		National League
6	1996				
7	1995	Indians	2	4	Bre
8	1993	Blue Jays	4	2	Phillies
9	1992	Blue Jays	4	2	Braves
10	1991	Twins	4	3	Braves
11	1990	A's	0	4	Reds
12	1989	A's	4	0	Giants
13	1988	A's	1	4	Dodgers
14	1987	Twins	4	3	Cardinals
15	1986	Red Sox	3	4	Mets
16	1985	Royals	4	3	Cardinals
17	1984	Tigers	4	1	Padres
18	1983	Orioles	4	1	Phillies
19	1982	Brewers	3	4	Cardinals

FIG.3d


Microsoft Excel - World Series.xls
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B C D E F
4 RECENT WORLD SERIES
5 Year American League Score National League
6 1996
7 1995 Indians 2 4 Braves
8 1993 Blue Jays 4 2 P
9 1992 Blue Jays 4 2 Braves
10 1991 Twins 4 3 Braves
11 1990 A's 0 4 Reds
12 1989 A's 4 0 Giants
13 1988 A's 1 4 Dodgers
14 1987 Twins 4 3 Cardinals
15 1986 Red Sox 3 4 Mets
16 1985 Royals 4 3 Cardinals
17 1984 Tigers 4 1 Padres
18 1983 Orioles 4 1 Phillies
19 1982 Brewers 3 4 Cardinals
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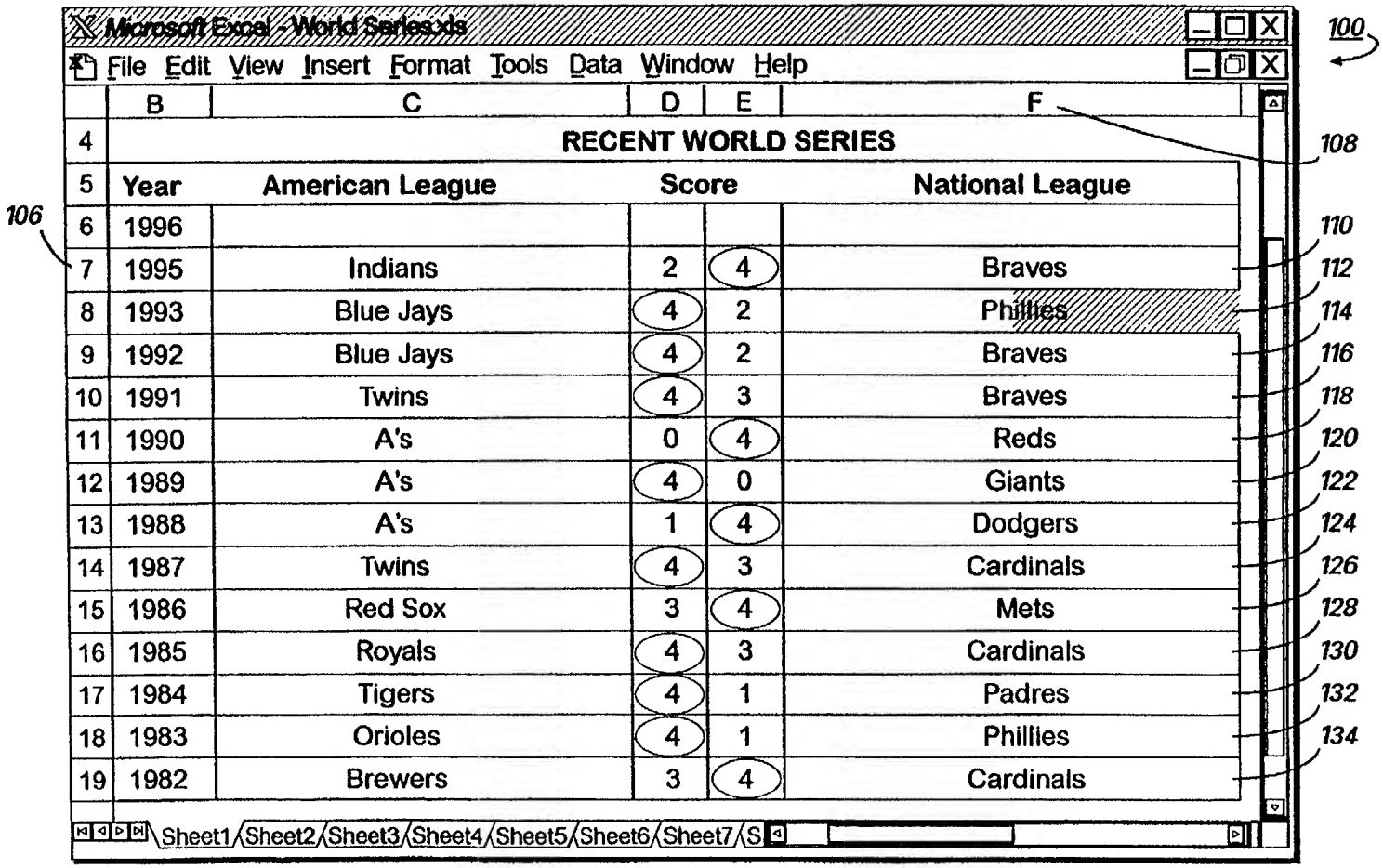
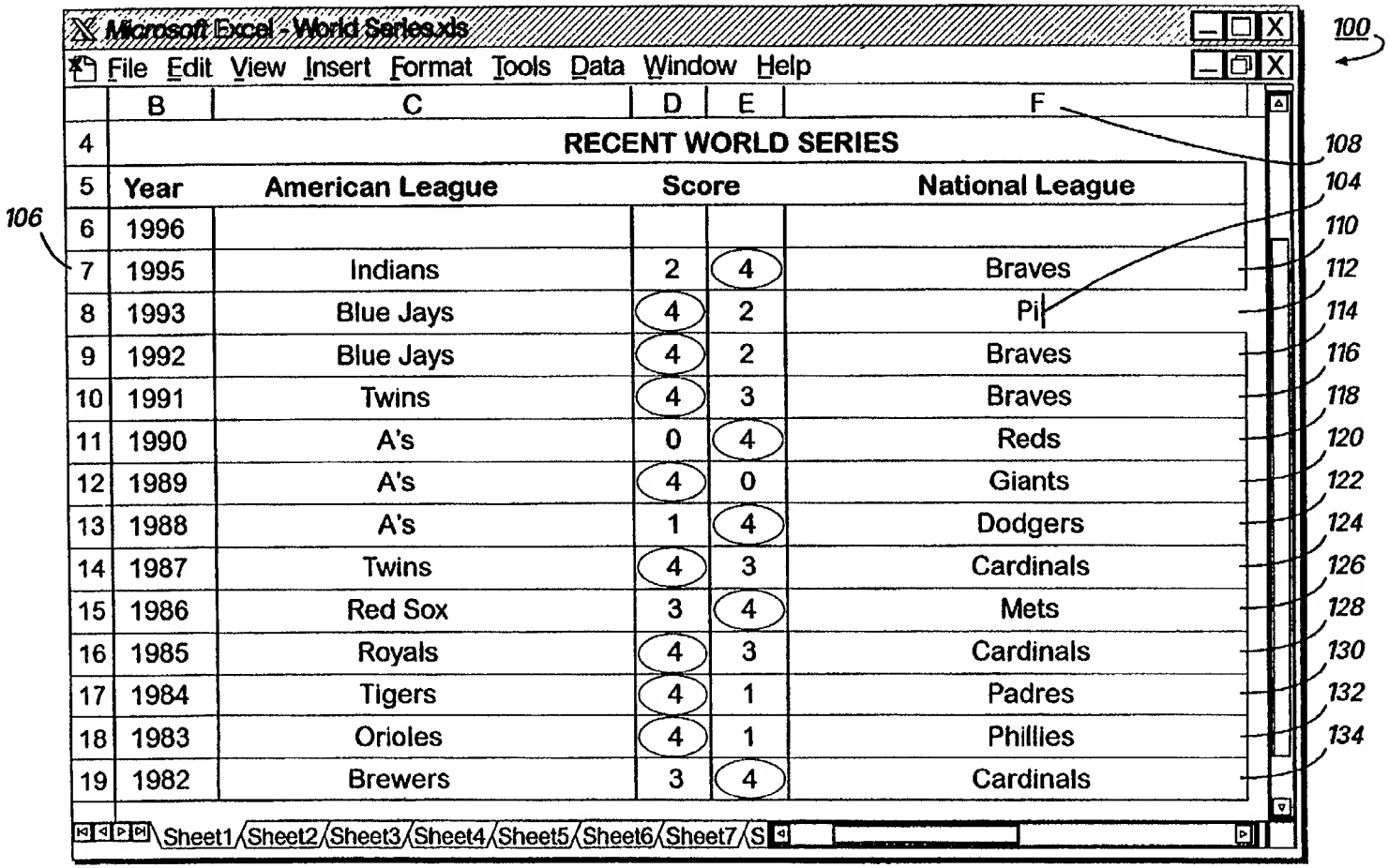
FIG. 3e



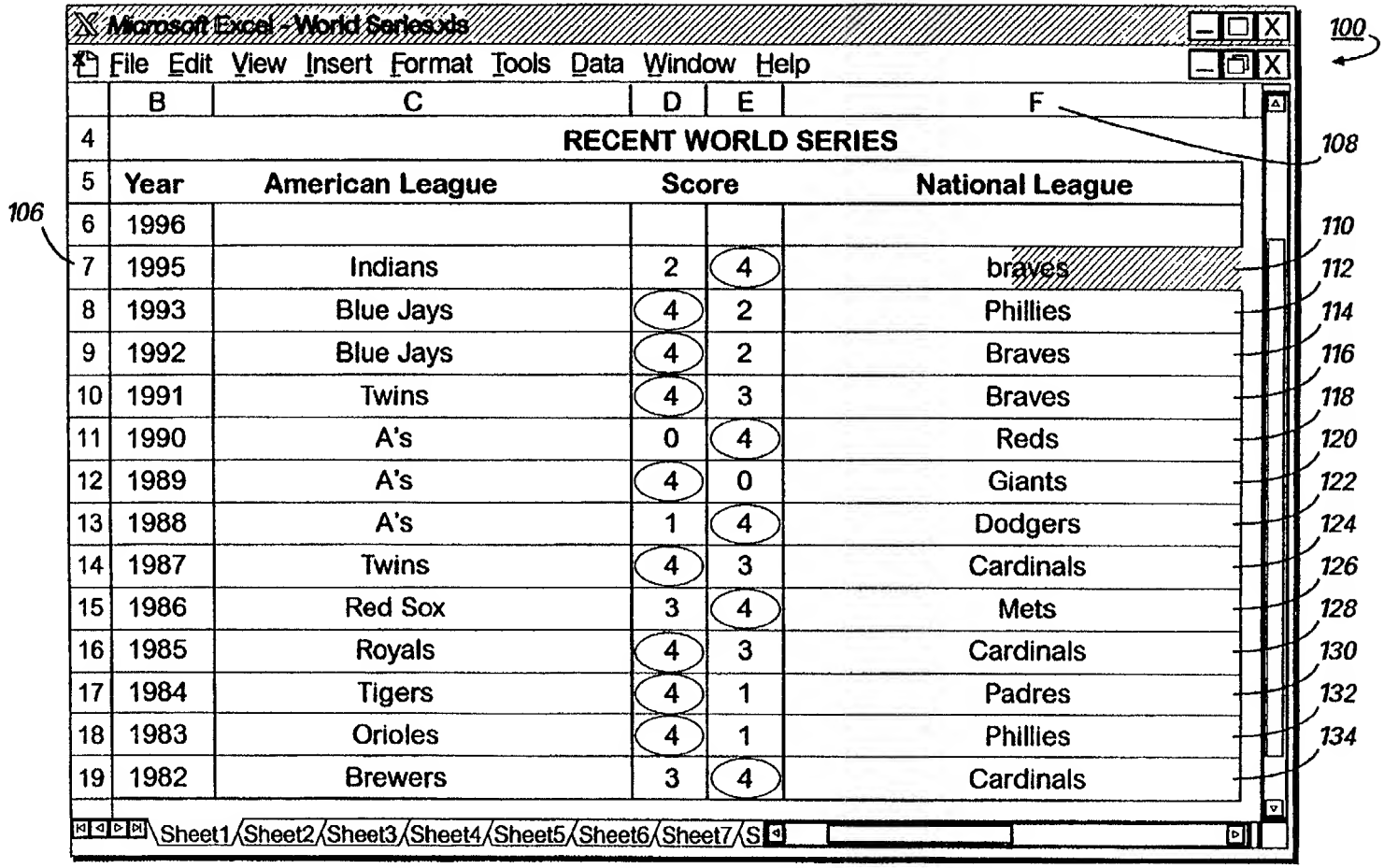
	B	C	D	E	F
4	RECENT WORLD SERIES				
5	Year	American League	Score		National League
6	1996				
7	1995	Indians	2	4	Braves
8	1993	Blue Jays	4	2	Phillies
9	1992	Blue Jays	4	2	Braves
10	1991	Twins	4	3	Braves
11	1990	A's	0	4	Reds
12	1989	A's	4	0	Giants
13	1988	A's	1	4	Dodgers
14	1987	Twins	4	3	Cardinals
15	1986	Red Sox	3	4	Mets
16	1985	Royals	4	3	Cardinals
17	1984	Tigers	4	1	Padres
18	1983	Orioles	4	1	Phillies
19	1982	Brewers	3	4	Cardinals

FIG.3f



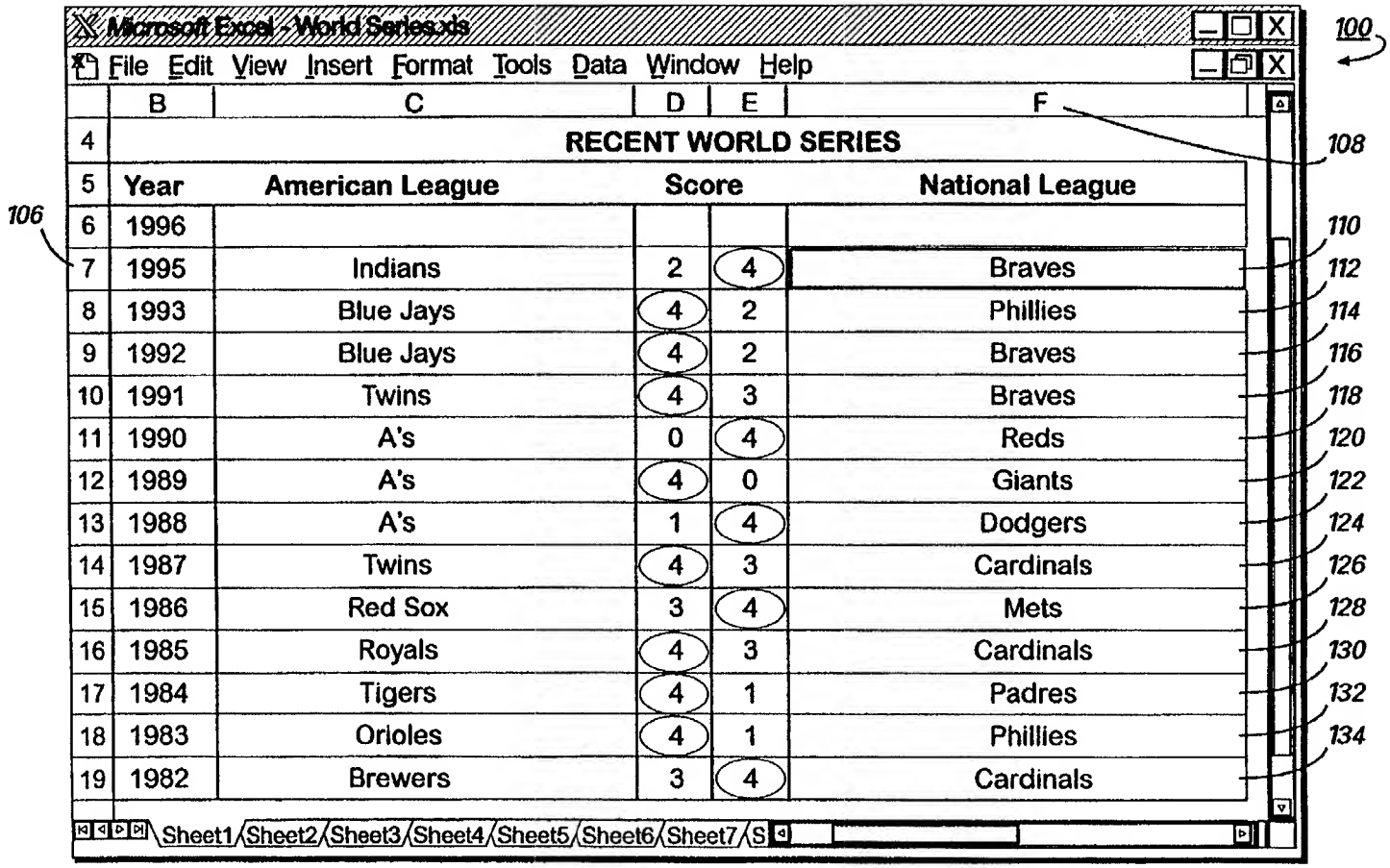
	B	C	D	E	F
4	RECENT WORLD SERIES				
5	Year	American League	Score		National League
6	1996				
7	1995	Indians	2	4	Braves
8	1993	Blue Jays	4	2	Pi
9	1992	Blue Jays	4	2	Braves
10	1991	Twins	4	3	Braves
11	1990	A's	0	4	Reds
12	1989	A's	4	0	Giants
13	1988	A's	1	4	Dodgers
14	1987	Twins	4	3	Cardinals
15	1986	Red Sox	3	4	Mets
16	1985	Royals	4	3	Cardinals
17	1984	Tigers	4	1	Padres
18	1983	Orioles	4	1	Phillies
19	1982	Brewers	3	4	Cardinals

FIG.3g



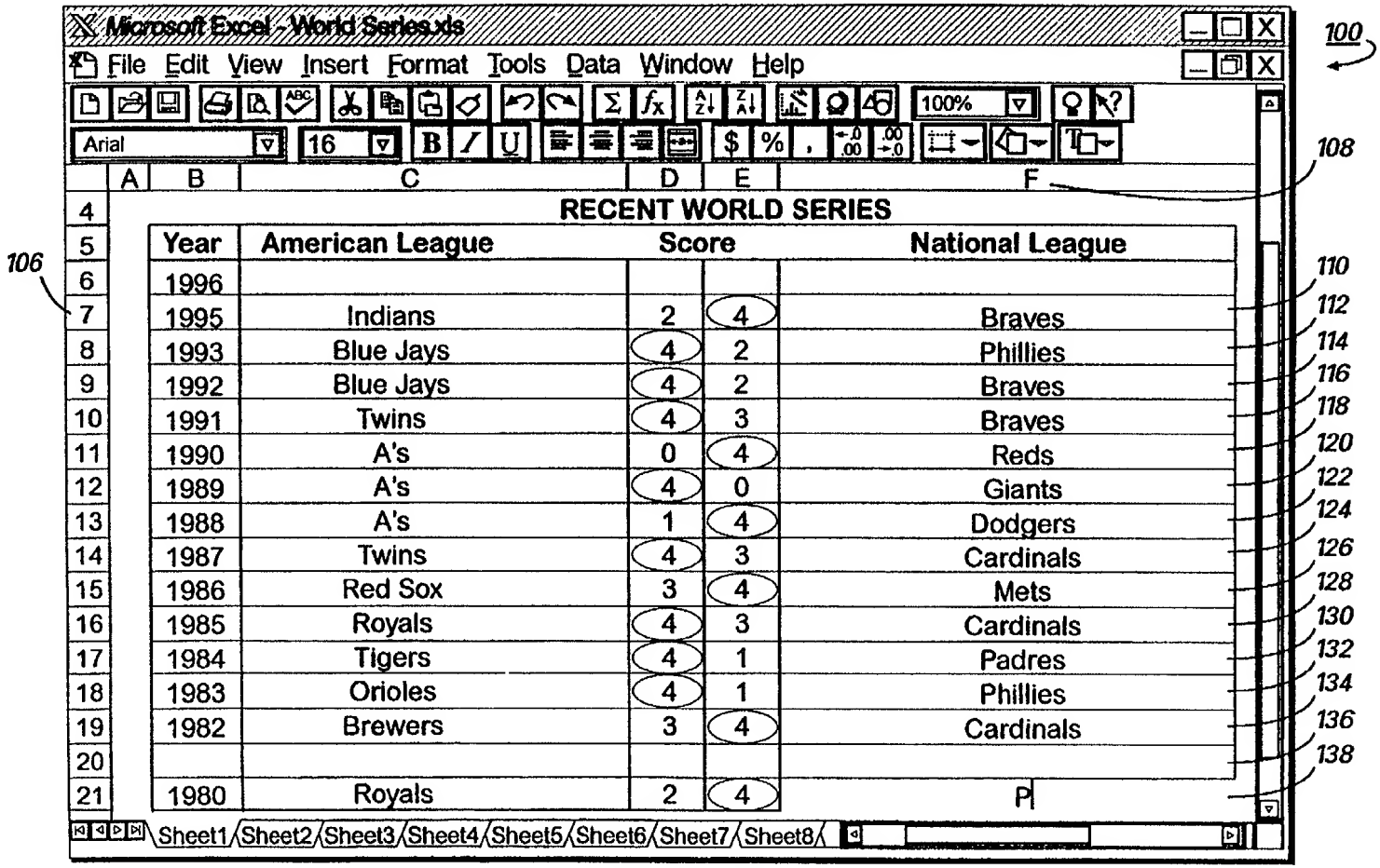
	B	C	D	E	F
4	RECENT WORLD SERIES				
5	Year	American League	Score		National League
6	1996				
7	1995	Indians	2	4	braves
8	1993	Blue Jays	4	2	Phillies
9	1992	Blue Jays	4	2	Braves
10	1991	Twins	4	3	Braves
11	1990	A's	0	4	Reds
12	1989	A's	4	0	Giants
13	1988	A's	1	4	Dodgers
14	1987	Twins	4	3	Cardinals
15	1986	Red Sox	3	4	Mets
16	1985	Royals	4	3	Cardinals
17	1984	Tigers	4	1	Padres
18	1983	Orioles	4	1	Phillies
19	1982	Brewers	3	4	Cardinals

FIG.3h



	B	C	D	E	F
4	RECENT WORLD SERIES				
5	Year	American League	Score		National League
6	1996				
7	1995	Indians	2	4	Braves
8	1993	Blue Jays	4	2	Phillies
9	1992	Blue Jays	4	2	Braves
10	1991	Twins	4	3	Braves
11	1990	A's	0	4	Reds
12	1989	A's	4	0	Giants
13	1988	A's	1	4	Dodgers
14	1987	Twins	4	3	Cardinals
15	1986	Red Sox	3	4	Mets
16	1985	Royals	4	3	Cardinals
17	1984	Tigers	4	1	Padres
18	1983	Orioles	4	1	Phillies
19	1982	Brewers	3	4	Cardinals

FIG.3i


Microsoft Excel - World Series.xls
File Edit View Insert Format Tools Data Window Help
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16
RECENT WORLD SERIES
Year
American League
Score
National League
1996
1995 Indians 2 4 Braves
1993 Blue Jays 4 2 Phillies
1992 Blue Jays 4 2 Braves
1991 Twins 4 3 Braves
1990 A's 0 4 Reds
1989 A's 4 0 Giants
1988 A's 1 4 Dodgers
1987 Twins 4 3 Cardinals
1986 Red Sox 3 4 Mets
1985 Royals 4 3 Cardinals
1984 Tigers 4 1 Padres
1983 Orioles 4 1 Phillies
1982 Brewers 3 4 Cardinals
1980 Royals 2 4 P
Sheet1 Sheet2 Sheet3 Sheet4 Sheet5 Sheet6 Sheet7 Sheet8
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FIG.3j

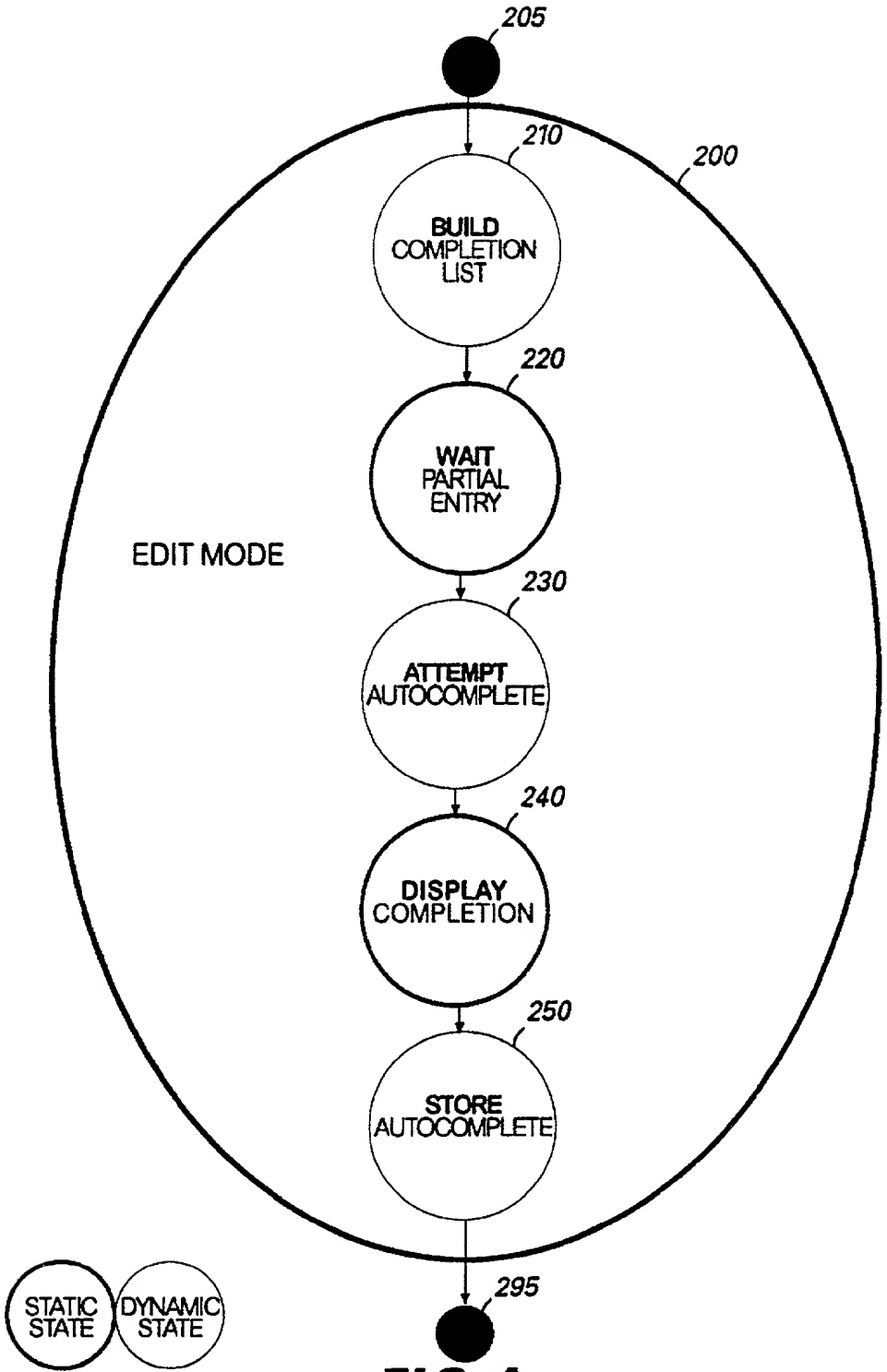
205
210
200
BUILD COMPLETION LIST
220
WAIT PARTIAL ENTRY
EDIT MODE
230
ATTEMPT AUTOCOMPLETE
240
DISPLAY COMPLETION
250
STORE AUTOCOMPLETE
295
STATIC STATE
DYNAMIC STATE

FIG.4

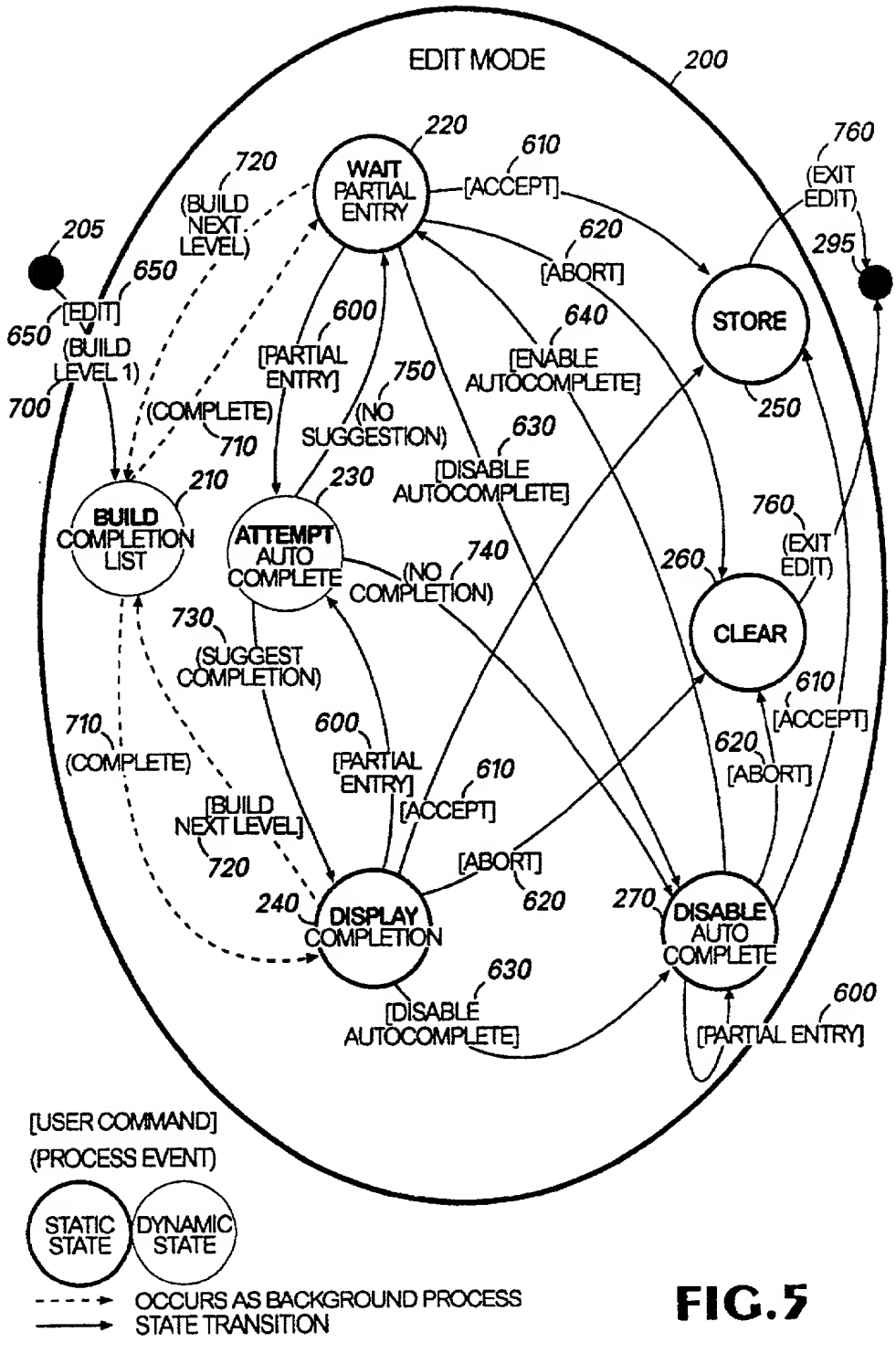
EDIT MODE
200
WAIT PARTIAL ENTRY
220
[ACCEPT]
610
(BUILD NEXT LEVEL)
720
205
[EDIT]
650
650
(BUILD LEVEL 1)
700
[PARTIAL ENTRY]
600
(COMPLETE)
710
(NO SUGGESTION)
750
[ENABLE AUTOCOMPLETE]
640
[ABORT]
620
[DISABLE AUTOCOMPLETE]
630
STORE
250
760
(EXIT EDIT)
295
BUILD COMPLETION LIST
210
ATTEMPT AUTO COMPLETE
230
(NO COMPLETION)
740
CLEAR
260
730
(SUGGEST COMPLETION)
710
(COMPLETE)
600
[PARTIAL ENTRY]
610
[ACCEPT]
620
[ABORT]
[BUILD NEXT LEVEL]
720
240
DISPLAY COMPLETION
[ABORT]
620
270
DISABLE AUTO COMPLETE
630
[DISABLE AUTOCOMPLETE]
600
[PARTIAL ENTRY]
[USER COMMAND]
(PROCESS EVENT)
STATIC STATE
DYNAMIC STATE
OCCURS AS BACKGROUND PROCESS
STATE TRANSITION

FIG.5

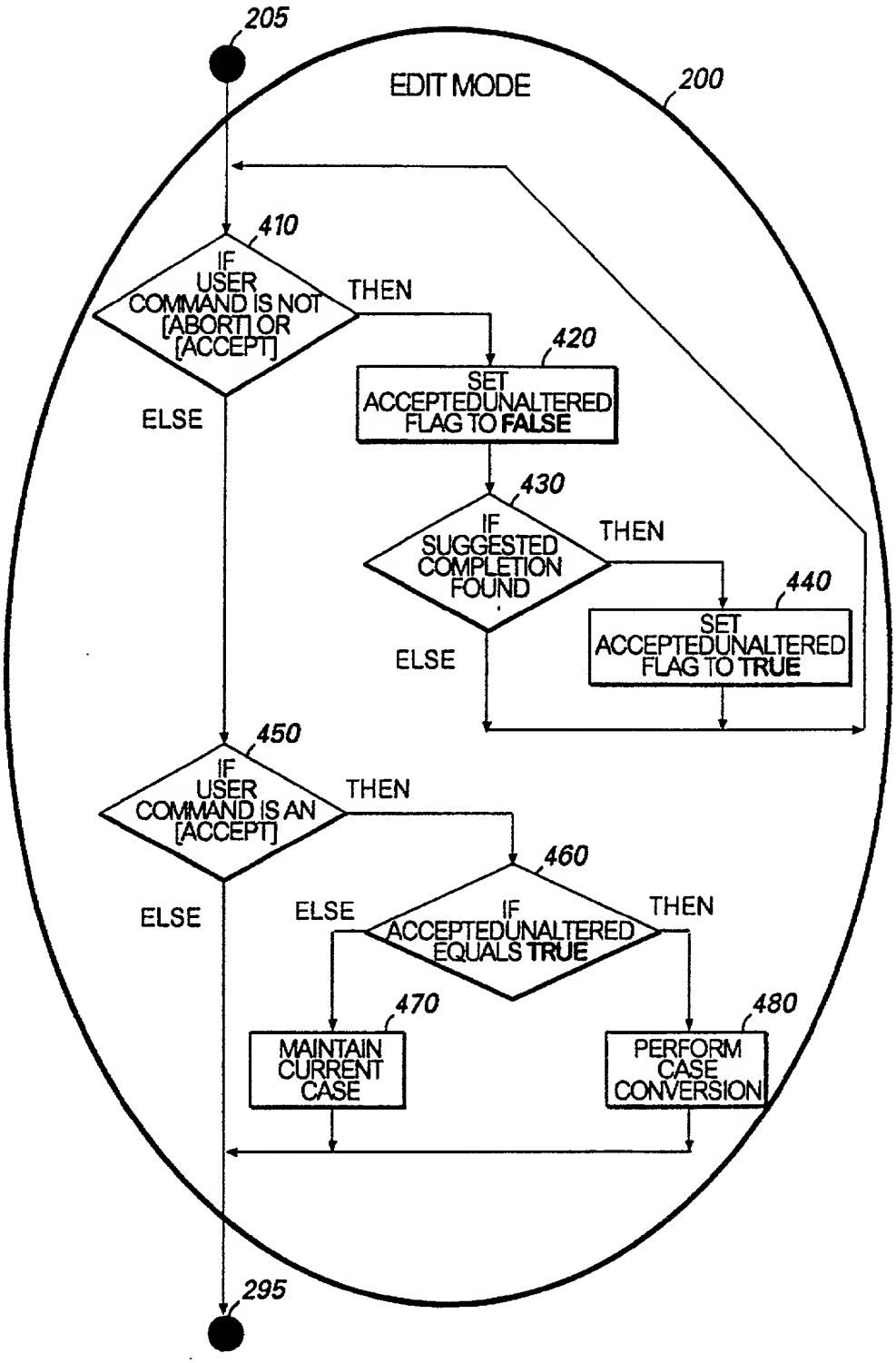
205
EDIT MODE
200
410
IF USER COMMAND IS NOT [ABORT] OR [ACCEPT]
THEN
ELSE
420
SET ACCEPTEDUNALTERED FLAG TO FALSE
430
IF SUGGESTED COMPLETION FOUND
THEN
ELSE
440
SET ACCEPTEDUNALTERED FLAG TO TRUE
450
IF USER COMMAND IS AN [ACCEPT]
THEN
ELSE
460
IF ACCEPTEDUNALTERED EQUALS TRUE
ELSE
THEN
470
MAINTAIN CURRENT CASE
480
PERFORM CASE CONVERSION
295

FIG.6

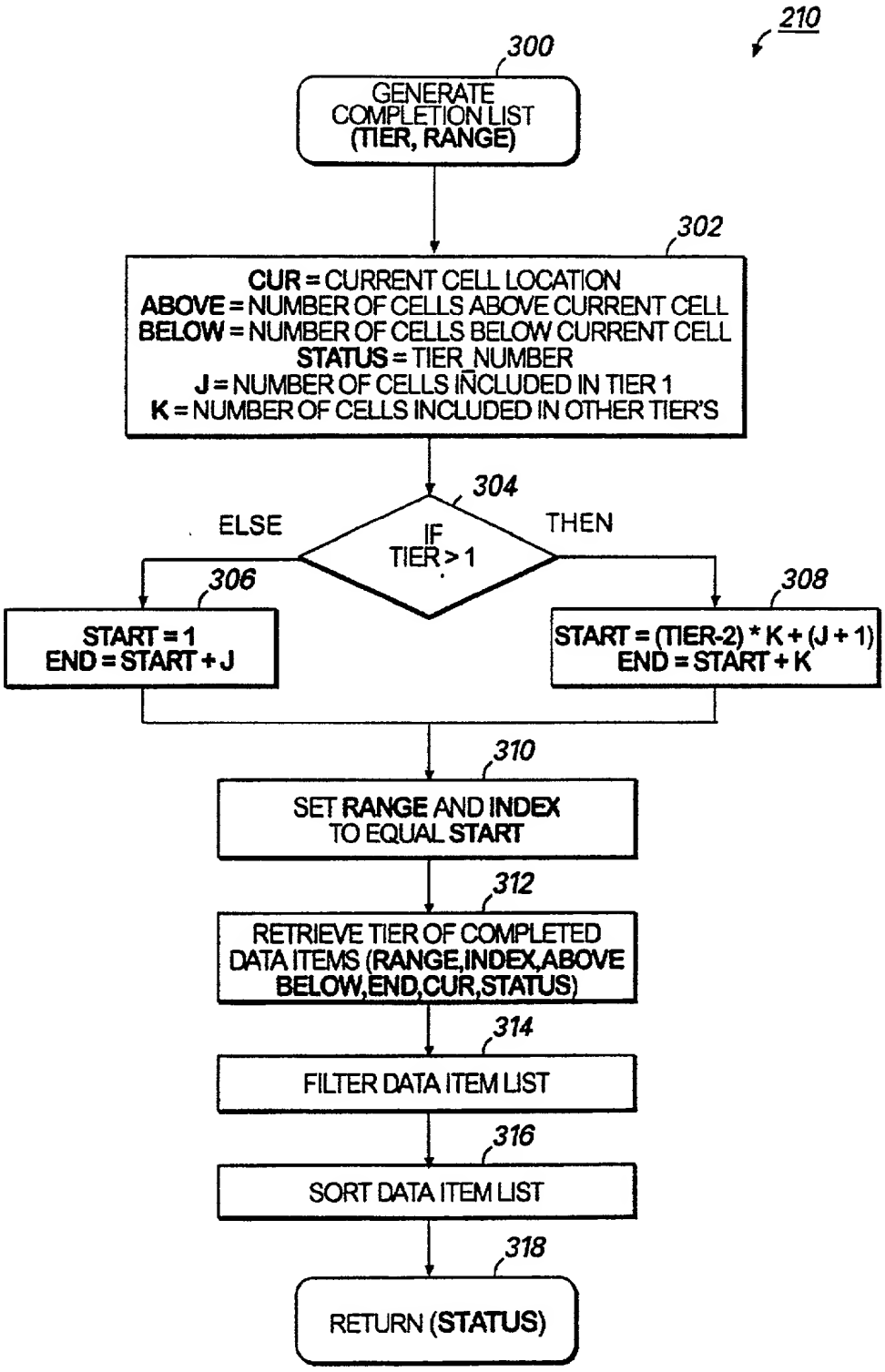
210
300
GENERATE COMPLETION LIST (TIER, RANGE)
302
CUR = CURRENT CELL LOCATION
ABOVE = NUMBER OF CELLS ABOVE CURRENT CELL
BELOW = NUMBER OF CELLS BELOW CURRENT CELL
STATUS = TIER_NUMBER
J = NUMBER OF CELLS INCLUDED IN TIER 1
K = NUMBER OF CELLS INCLUDED IN OTHER TIER'S
304
IF TIER > 1
ELSE
THEN
306
START = 1
END = START + J
308
START = (TIER-2) * K + (J + 1)
END = START + K
310
SET RANGE AND INDEX TO EQUAL START
312
RETRIEVE TIER OF COMPLETED DATA ITEMS (RANGE,INDEX,ABOVE BELOW,END,CUR,STATUS)
314
FILTER DATA ITEM LIST
316
SORT DATA ITEM LIST
318
RETURN (STATUS)

FIG.7a

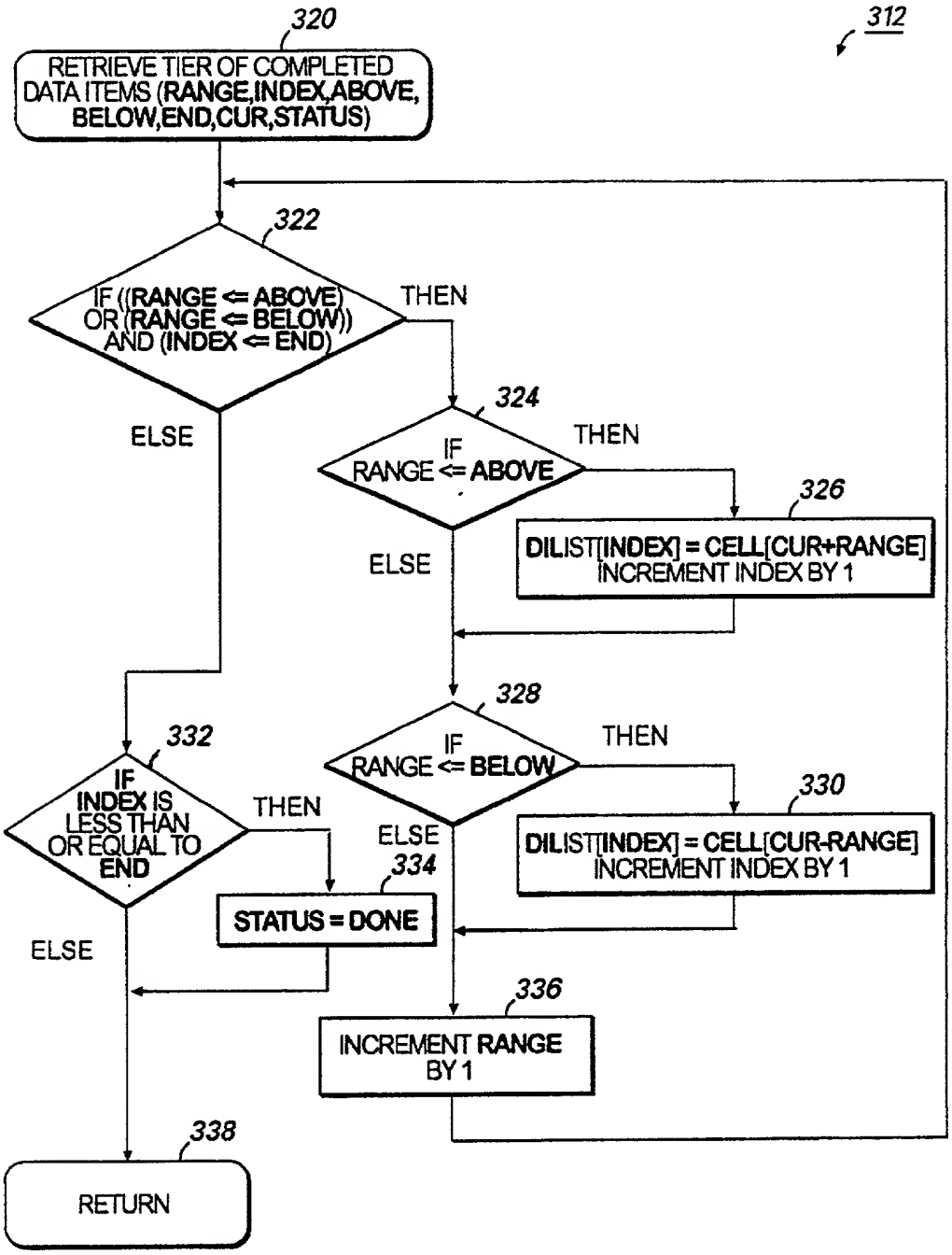
312
320
RETRIEVE TIER OF COMPLETED DATA ITEMS (RANGE,INDEX,ABOVE, BELOW,END,CUR,STATUS)
322
IF ((RANGE <= ABOVE) OR (RANGE <= BELOW)) AND (INDEX <= END)
THEN
ELSE
324
IF RANGE <= ABOVE
THEN
ELSE
326
DILIST[INDEX] = CELL[CUR+RANGE] INCREMENT INDEX BY 1
328
IF RANGE <= BELOW
THEN
ELSE
330
DILIST[INDEX] = CELL[CUR-RANGE] INCREMENT INDEX BY 1
332
IF INDEX IS LESS THAN OR EQUAL TO END
THEN
ELSE
334
STATUS = DONE
336
INCREMENT RANGE BY 1
338
RETURN

FIG.7b

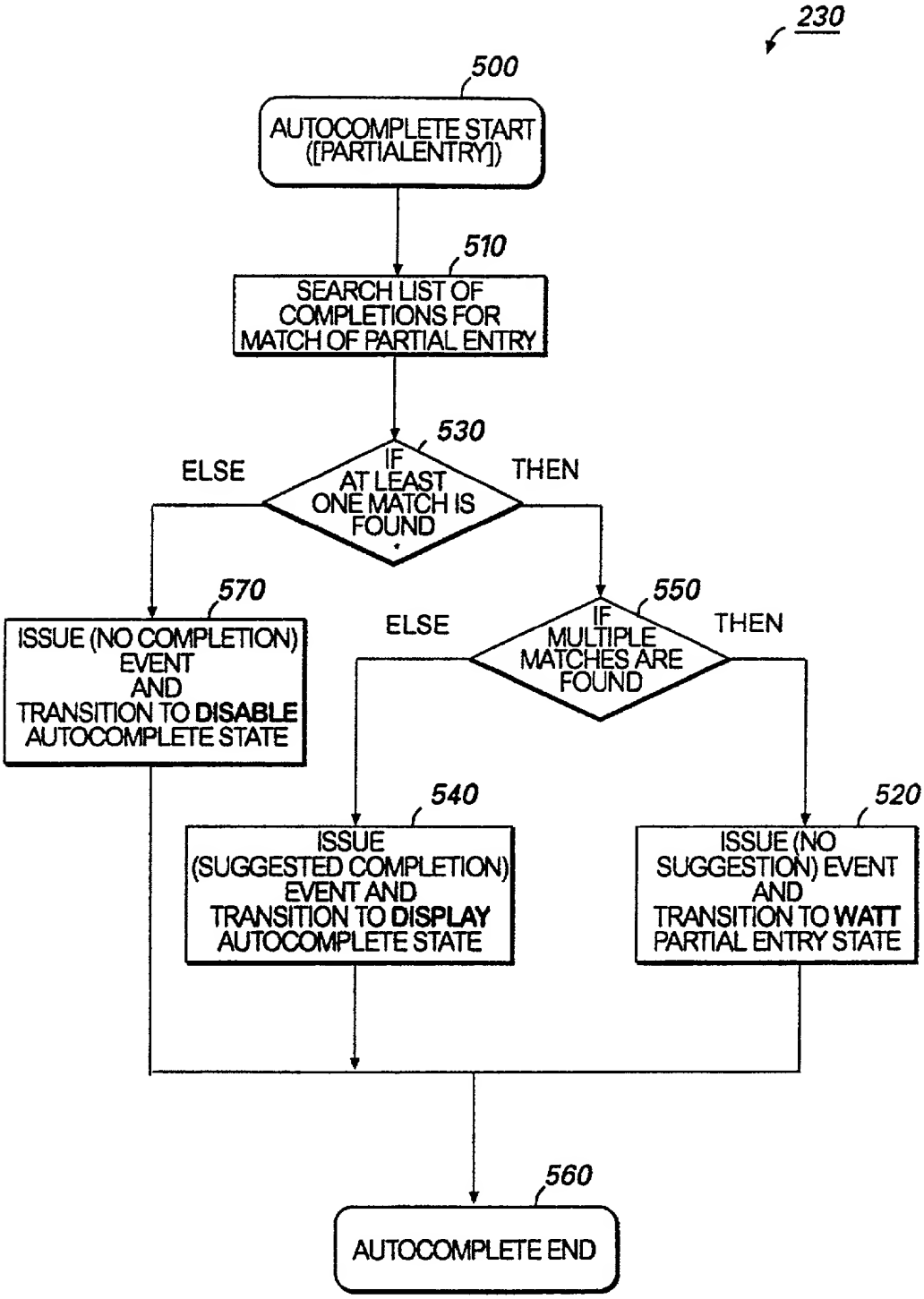
230
500
AUTOCOMPLETE START ([PARTIALENTRY])
510
SEARCH LIST OF COMPLETIONS FOR MATCH OF PARTIAL ENTRY
530
IF AT LEAST ONE MATCH IS FOUND
ELSE
THEN
570
ISSUE (NO COMPLETION) EVENT AND TRANSITION TO DISABLE AUTOCOMPLETE STATE
550
IF MULTIPLE MATCHES ARE FOUND
ELSE
THEN
540
ISSUE (SUGGESTED COMPLETION) EVENT AND TRANSITION TO DISPLAY AUTOCOMPLETE STATE
520
ISSUE (NO SUGGESTION) EVENT AND TRANSITION TO WATT PARTIAL ENTRY STATE
560
AUTOCOMPLETE END

FIG.8